

CLAIMS

We claim the following:

- 1 1. A method for using video encoding resources in an article handling
2 system, the method comprising steps of:
3 determining whether an estimated time for video coding exceeds a
4 determined threshold, if an imaging device does not resolve information
5 needed for handling an article, and
6 sending image data for unresolved information to a video coding
7 station if the estimated time for video coding does not exceed the
8 determined threshold.
- 1 2. The method of claim 1, further comprising a step of sending image
2 data for the unresolved information to a video coding buffer before the
3 image data is sent to the video coding station.
- 1 3. The method of claim 2, further comprising steps of:
2 determining whether the video coding station is busy if the
3 estimated time for video coding exceeds the determined threshold, and
4 sending image data for the unresolved information to the video
5 coding buffer if the video coding station is not busy..
- 1 4. The method of claim 3, wherein if the video coding station is busy,
2 then the image data for the unresolved information is not sent to the video
3 coding buffer.
- 1 5. The method of claim 4, wherein the estimated time for video coding is

2 comprised of a weighted average response time.

1 6. The method of claim 5, wherein, if the image data for the unresolved
2 information is sent to the video coding station before a timeout occurs,
3 then the weighted average response time is computed according to the
4 following equation:

$$6 \quad vcs_avg_n = \frac{(vcs_avg_{n-1} \times VCS_AVG_WEIGHT) + t_{response}}{VCS_AVG_WEIGHT + 1}$$

7 where:

8 vcs_avg_n is the weighted average response time,

9 vcs_avg_{n-1} is a preceding weighted average response time,

10 VCS_AVG_WEIGHT is a configurable weight factor, and

11 $t_{response}$ is the amount of time from the time the image data for the
12 unresolved information is sent to the video coding buffer until the time the
13 information is resolved at the video coding station.

1 7. The method of claim 5, wherein, if the image data for the unresolved
2 information is not sent to the video coding station before a timeout occurs,
3 then the weighted average response time is computed according to the
4 following equation:

$$6 \quad vcs_avg_n = \frac{(vcs_avg_{n-1} \times VCS_AVG_WEIGHT) + VCS_AVG_THRESHOLD + 1}{VCS_AVG_WEIGHT + 1}$$

7 where:

8 vcs_avg_n is the weighted average response time,

9 vcs_avg_{n-1} is a preceding weighted average response time,

10 VCS_AVG_WEIGHT is a configurable weight factor, and

11 *VCS_AVG_THRESHOLD* is a determined threshold response time for
12 timed-out articles.

1 8. The method of claim 7, further including a step of temporarily storing
2 image data for the unresolved information in a wait queue before sending
3 such image data to the video coding buffer.

1 9. The method of claim 8, further including a step of providing a video
2 encoding result message, the video encoding result message including
3 resolved information needed for handling the article in the article handling
4 system, if the image data for the unresolved information is sent to the
5 video coding station before a timeout occurs and the information is
6 resolved, the article being a mail piece.

1 10. A method for using available video encoding resources in an article
2 handling system, the method comprising steps of:
3 determining whether an estimated time for video coding exceeds a
4 determined threshold, if the imaging device does not resolve information
5 needed for handling an article, and
6 sending image data for the unresolved information to a wait queue
7 until a determined release event or timeout occurs if the estimated time for
8 video coding does not exceed the determined threshold,
9 sending the image data for the unresolved information from the
10 wait queue to the video coding buffer if a determined release event occurs;
11 if the estimated time for video coding exceeds the determined
12 threshold, then determining whether the video coding station is busy, and
13 if the video coding station is not busy, then sending image data for the
14 unresolved information to the wait queue until a determined release event

15 or timeout occurs, and if the determined release event occurs, then sending
 16 the image data for the unresolved information from the wait queue to the
 17 video coding buffer; and if the video coding station is busy, then not
 18 sending the image data for the unresolved information to the video coding
 19 buffer.

1 11. The method of claim 10, wherein, if the image data for the unresolved
 2 information is sent from the video coding buffer to the video coding
 3 station before a timeout occurs, then the weighted average response time is
 4 computed according to the following equation:

$$6 \quad vcs_avg_n = \frac{(vcs_avg_{n-1} \times VCS_AVG_WEIGHT) + t_{response}}{VCS_AVG_WEIGHT + 1}$$

7 where:

8 vcs_avg_n is the weighted average response time,

9 vcs_avg_{n-1} is a preceding weighted average response time,

10 VCS_AVG_WEIGHT is a configurable weight factor, and

11 $t_{response}$ is the amount of time from the time the image data for the
 12 unresolved information is sent to the video coding buffer until the time the
 13 information is resolved at the video coding station.

1 12. The method of claim 11, wherein, if the image data for the unresolved
 2 information is not sent from the video coding buffer to the video coding
 3 station before a timeout occurs, then the weighted average response time is
 4 computed according to the following equation:

$$6 \quad vcs_avg_n = \frac{(vcs_avg_{n-1} \times VCS_AVG_WEIGHT) + VCS_AVG_THRESHOLD + 1}{VCS_AVG_WEIGHT + 1}$$

7 where:
 8 *vcs_avg_n* is the weighted average response time,
 9 *vcs_avg_{n-1}* is a preceding weighted average response time,
 10 *VCS_AVG_WEIGHT* is a configurable weight factor, and
 11 *VCS_AVG_THRESHOLD* is a determined threshold response time for
 12 timed-out articles.

1 13. The method of claim 12, further including a step of providing a video
 2 encoding result message, the video encoding result message including
 3 resolved information needed for handling the article in the article handling
 4 system, if the image data for the unresolved information is sent to the
 5 video coding station before a timeout occurs and the information is
 6 resolved.

1 14. The method of claim 10, wherein the article is mail pieces.

1 15. A system for using available video encoding resources for handling
 2 articles in an article handling system, comprising:
 3 an imaging device which produces image data representative of
 4 information on an article,
 5 a video coding station which manually enters unresolved
 6 information, and
 7 at least one programmable processor operatively coupled to the
 8 imaging device and the video coding station,
 9 wherein at least one of the at least one programmable processor is
 10 programmed to determine whether an estimated time for video coding
 11 exceeds a determined threshold if the imaging device does not resolve
 12 information needed for handling an article, and sending image data for the

13 unresolved information to the video coding station if the estimated time
14 for video coding does not exceed the determined threshold.

1 16. The system of claim 15, further including a video coding buffer for
2 buffering image data before the image data is sent to the video coding
3 station.

1 17. The system of claim 16, wherein at least one of the at least one
2 programmable processor determines whether the video coding station is
3 busy if the estimated time for video coding exceeds the determined
4 threshold, and sends image data for the unresolved information to the
5 video coding buffer if the video coding station is not busy.

1 18. The system of claim 17, wherein none of the at least one
2 programmable processor sends image data for the unresolved information
3 to the video coding buffer if the estimated time for video coding exceeds
4 the determined threshold and the video coding station is busy.

1 19. The system of claim 16, further including a wait queue for temporarily
2 storing image data for the unresolved information before such image data
3 is sent to the video coding buffer.

1 20. The system of claim 15, wherein at least one of the at least one
2 programmable processor determines the estimated time for video coding
3 based on a weighted average response time.